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| 10/693,958 | 10/28/2003 | Hayato Nakanishi | 117528 | 4567 |

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| EXAMINER |
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BODDIE, WILLIAM

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| ART UNIT | PAPER NUMBER |
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2629

DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/693,958 | Applicant(s) NAKANISHI, HAYATO | |
| | Examiner William Boddie | Art Unit 2629 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☒ Claim(s) 1 and 2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>11/14/05, 10/28/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: the first switch phrase states, "at least one data line of the plurality of data lines to the at least one data line". This second occurrence of "to the at least one data line" appears to have been unintentional, the claim will be examined based on this assumption. Appropriate correction is required.
2. Claim 2 is objected to because of the following informalities: the limitation reciting a set of third switches is seen as confusing. As claim 2 is in independent form it leaves the reader asking where the first and second switches are in claim 2. One possible remedy is to simply recite "first switches" instead of "third switches." As claim 2 is independent there will be no connection between the first switches of claim 1 with the first switches of claim 2. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 3 is rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi (US 5,528,163).

With respect to claim 3, Takahashi discloses, an electro-optical device (fig. 6), comprising:

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a plurality of scanning lines (G1-Gm in fig. 6);

a plurality of data lines (D1-Dn in fig. 6);

a plurality of electro-optical elements (Cs in fig. 6) provided to correspond to intersections of the plurality of scanning lines and the plurality of data lines;

at least two precharge lines (first lines connected to data lines in fig. 6; there are clearly one for each data line) to supply precharge signals to at least two data lines of the plurality of data lines;

first switches (Sd1-Sdn in fig. 6) to control the output of the precharge signal (Vd in fig. 3) from the at least two precharge lines (Vd in fig. 6, 1st line connected to each data line) connected to the at least two data lines of the plurality of data lines (clear from fig. 6);

second switches (Sr1-Srn in fig. 6) to control the output of detection signals (detected waveform in fig. 3) from the at least two data lines of the plurality of data lines to test lines (2nd line connected to each data line).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2, 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US 5,528,163) in view of Plus et al. (US 5,113,134).

With respect to claim 1, Takahashi discloses, an electro-optical device (fig. 6), comprising:

- a plurality of scanning lines (G1-Gm in fig. 6);
- a plurality of data lines (D1-Dn in fig. 6);
- a plurality of electro-optical elements (Cs in fig. 6) provided to correspond to intersections of the plurality of scanning lines and the plurality of data lines;
- first switches (Sd1-Sdn in fig. 6) to control the supply of a precharge signal (Vd in fig. 3) from a precharge signal supply line (Vd in fig. 6, 1st line connected to each data line) connected to at least one data line of the plurality of data lines (clear from fig. 6);
- second switches (Sr1-Srn in fig. 6) connected to the at least one data line of the plurality of data lines to control the output of a detection signal (detected waveform in fig. 3) from the at least one data line to test lines (2nd line connected to each data line).

Takahashi does not expressly disclose, a data line selection circuit to set the on or off state of the second switches.

Plus discloses, a data line selection circuit (19) to set the on or off state of switches (17) that control the output of a detection signal (col. 3, lines 5-11).

Plus and Takahashi are analogous art because they are both from the same field of endeavor namely testing and inspecting the liquid crystal displays.

At the time of the invention it would have been obvious to one of ordinary skill in the art to control the second switches of Takahashi with the shift register, taught by Plus.

The motivation for doing so would have been efficiency to maintain a low complexity of the circuit by using a very common display element.

Therefore it would have been obvious to combine Plus with Takahashi for the benefit of decreased circuit complexity to obtain the invention as specified in claim 1.

With respect to claim 2, Takahashi discloses, an electro-optical device (fig. 6), comprising:

- a plurality of scanning lines (G1-Gm in fig. 6);

- a plurality of data lines (D1-Dn in fig. 6);

- a plurality of electro-optical elements (Cs in fig. 6) provided to correspond to intersections of the plurality of scanning lines and the plurality of data lines;

- third switches (Sd1, Sr1 – Sdn, Srn) to control the supply of precharge signals (Vd in fig. 3) from input and output signal lines (1st and 2nd lines connected to the data lines in fig. 6) connected to at least one data line of the plurality of data lines to the at least one data line and to control the output of a test signal (detected waveform in fig. 3) from the at least one data line to the input and output signal lines (Sd1-n control the precharge signal; while Sr1-n controls the test signal).

Takahashi does not expressly disclose, a data line selection circuit to set the on or off state of the second switches.

Plus discloses, a data line selection circuit (19) to set the on or off state of switches (17) that control the output of a detection signal (col. 3, lines 5-11).

Plus and Takahashi are analogous art because they are both from the same field of endeavor namely testing and inspecting the liquid crystal displays.

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At the time of the invention it would have been obvious to one of ordinary skill in the art to control the second switches of Takahashi with the shift register, taught by Plus.

The motivation for doing so would have been efficiency to maintain a low complexity of the circuit by using a very common display element.

Therefore it would have been obvious to combine Plus with Takahashi for the benefit of decreased circuit complexity to obtain the invention as specified in claim 2.

With respect to claim 4, Takahashi discloses, an electro-optical device according to claim 3 (see above).

Takahashi does not expressly disclose, a data line selection circuit to control precharge signals output from at least two data lines to the test lines by sequentially operating the second switches.

Plus discloses, a data line selection circuit (19) to control the on or off state of switches (17) sequentially (col. 3, lines 5-11).

Plus and Takahashi are analogous art because they are both from the same field of endeavor namely testing and inspecting the liquid crystal displays.

At the time of the invention it would have been obvious to one of ordinary skill in the art to control the second switches of Takahashi with the shift register, taught by Plus.

The motivation for doing so would have been efficiency to maintain a low complexity of the circuit by using a very common display element.

Therefore it would have been obvious to combine Plus with Takahashi for the benefit of decreased circuit complexity to obtain the invention as specified in claim 2.

With respect to claim 7, Takahashi and Plus disclose the electro-optical device according to claim 1 (see above).

Plus further discloses, an electronic apparatus (col. 1, lines 8-9).

7. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US 5,528,163) in view of LeChevalier (US 2004/0085086).

With respect to claim 5, Takahashi discloses, a method of driving an electro-optical device (col. 1, lines 5-7), including:

- a plurality of scanning lines (G1-Gm in fig. 6);
 - a plurality of data lines wired to intersect the scanning lines (D1- Dn in fig. 6);
 - electronic circuits provided to correspond to intersections of the scanning lines and the data lines (Cs, TFT in fig. 6);
 - first switches (Sd1-Sdn in fig. 6) to control the supply of a precharge signal (Vd in fig. 3) from a precharge signal supply line (Vd; 1st line connected to the data line) connected to at least one data line of the plurality of data lines to the at least one data line; and
 - second switches (Sr1-Srn in fig. 6) connected to the at least one data line of the plurality of data lines to control the output of a detection signal (detected waveform in fig. 3) from the at least one data line to test lines (2nd line connected to each data line);
- the method comprising:

supplying a precharge signal from a precharge signal supply line to the data lines through the first switches when one of the plurality of scanning lines is selected (application of Vd pulse in fig. 3); and

outputting a detection signal (detected waveform in fig. 3) to test lines (2nd line connected to each data line) through the second switches (Sr1-n in fig. 6).

Takahashi does not expressly disclose supplying data signals to the electronic circuits.

LeChevalier discloses, supplying data signals ("selected exposure current" in para. 51) to electronic circuits (202... in fig. 2) connected to the selected scanning line through the data lines (clear from fig. 2); and

outputting data signals supplied to the data lines as detection signals ("sampling conduction voltage" in para. 51).

LeChevalier and Takahashi are analogous art because they are both from the same field of endeavor namely testing and calibrating liquid crystal displays.

At the time of the invention it would have been obvious to one of ordinary skill in the art to supply data signals, as taught by LeChevalier, after supplying the precharging pulse of Takahashi.

The motivation for doing so would have been to achieve a more realistic inspection that would test the display under real world driving.

Therefore it would have been obvious to combine Takahashi with LeChevalier for the benefit of a more realistic inspection to obtain the invention as specified in claim 5.

With respect to claim 6, Takahashi discloses, a method of driving an electro-optical device (col. 1, lines 5-7), including:

- a plurality of scanning lines (G1-Gm in fig. 6);
- a plurality of data lines wired to intersect the scanning lines (D1- Dn in fig. 6);
- electronic circuits provided to correspond to intersections of the scanning lines and the data lines (Cs, TFT in fig. 6);

- at least two precharge lines (first lines connected to data lines in fig. 6; there are clearly one for each data line) to supply precharge signals to at least two data lines of the plurality of data lines;

- first switches (Sd1-Sdn in fig. 6) to control the output of the precharge signal (Vd in fig .3) from the at least two precharge lines (Vd in fig. 6, 1st line connected to each data line) connected to the at least two data lines of the plurality of data lines (clear from fig. 6);

- second switches (Sr1-Srn in fig. 6) to control the output of detection signals (detected waveform in fig. 3) from the at least two data lines of the plurality of data lines to test lines (2nd line connected to each data line).the method comprising:

- supplying a precharge signal from a precharge signal supply line to the data lines through the first switches when one of the plurality of scanning lines is selected (application of Vd pulse in fig. 3); and

- outputting a detection signal (detected waveform in fig. 3) to test lines (2nd line connected to each data line) through the second switches (Sr1-n in fig. 6).

Takahashi does not expressly disclose supplying data signals to the electronic circuits.

LeChevalier discloses, supplying data signals ("selected exposure current" in para. 51) to electronic circuits (202... in fig. 2) connected to the selected scanning line through the data lines (clear from fig. 2); and

outputting data signals supplied to the data lines as detection signals ("sampling conduction voltage" in para. 51).

LeChevalier and Takahashi are analogous art because they are both from the same field of endeavor namely testing and calibrating liquid crystal displays.

At the time of the invention it would have been obvious to one of ordinary skill in the art to supply data signals, as taught by LeChevalier, after supplying the precharging pulse of Takahashi.

The motivation for doing so would have been to achieve a more realistic inspection that would test the display under real world driving.

Therefore it would have been obvious to combine Takahashi with LeChevalier for the benefit of a more realistic inspection to obtain the invention as specified in claim 6.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Will Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wlb
5/12/06

AMR A. AWAD
PRIMARY EXAMINER
